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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,171	10/23/2003	John W. Ketchum	020613	2624

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QUALCOMM, INC
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EXAMINER	
WILLIAMS, LAWRENCE B	

ART UNIT	PAPER NUMBER
2611	

DATE MAILED: 03/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/693,171	KETCHUM ET AL.	
	Examiner	Art Unit	
	Lawrence B. Williams	2638	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15,17-23,40 and 41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *40 and 41* is/are allowed.

6)☒ Claim(s) *1-8,11-15 and 17-23* is/are rejected.

7)☒ Claim(s) *9 and 10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Response to Arguments

1. Applicant's arguments with respect to claims 1-23, 40-41 have been considered but are moot in view of the new ground(s) of rejection.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1, 3-8, 13 are provisionally rejected on the ground of nonstatutory double patenting over claims 10-18 of copending Application No. 10/729,070. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common

subject matter, as follows: Although the claims are not identical, the claims in Application No. 10/729, 070 encompass either directly or inherently the claims of the instant application.

With regard to claim 1, claim 17 of Application No. 10/729,070 encompasses all limitations of claim 1.

With regard to claim 3, claim 17 of Application No. 10/729,070 encompasses all limitations of claim 1 (claim 10, line 5, steered reference).

With regard to claim 4, claim 17 of Application No. 10/729,070 encompasses all limitations of claim 1 (claim 10,steering vectors, "respective one of a pluarilty of steering vectors). This limitation would inherently teach the pilot transmissions from the MIMO system identifiable.

With regard to claim 5, claim 17 of Application No. 10/729,070 encompasses all limitations of claim 1 (claim 10, lines 14-17).

With regard to claim 6, claim 16 discloses singular value decomposition.

With regard to claim to claims 7-8, claim 17 inherently encompasses the limitations of both claims.

With regard to claim 13, claim 19 discloses this limitation.

"A later patent claim is not patentably distinct from an earlier patent claim if the later claim is obvious over, or **anticipated by**, the earlier claim. In re Longi, 759 F.2d at 896, 225 USPQ at 651 (affirming a holding of obviousness-type double patenting because the claims at issue were obvious over claims in four prior art patents); In re Berg, 140 F.3d at 1437, 46 USPQ2d at 1233 (Fed. Cir. 1998) (affirming a holding of obviousness-type double patenting where a patent application claim to a genus is anticipated by a patent claim to a species within that genus). " ELI LILLY AND COMPANY v BARR LABORATORIES, INC., United States Court of Appeals for the Federal Circuit, ON

PETITION FOR REHEARING EN BANC (DECIDED: May 30, 2001).

4. Claims 14-15, 17-18 are provisionally rejected on the ground of nonstatutory double patenting over claims 21-26 of copending Application No. 10/729,070. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows: Although the claims are not identical, the claims in Application No. 10/729, 070 encompass either directly or inherently the claims of the instant application.

"A later patent claim is not patentably distinct from an earlier patent claim if the later claim is obvious over, or **anticipated by**, the earlier claim. In re Longi, 759 F.2d at 896, 225 USPQ at 651 (affirming a holding of obviousness-type double patenting because the claims at issue were obvious over claims in four prior art patents); In re Berg, 140 F.3d at 1437, 46 USPQ2d at 1233 (Fed. Cir. 1998) (affirming a holding of obviousness-type double patenting where a patent application claim to a genus is anticipated by a patent claim to a species within that genus). " ELI LILLY AND COMPANY v BARR LABORATORIES, INC., United States Court of Appeals for the Federal Circuit, ON PETITION FOR REHEARING EN BANC (DECIDED: May 30, 2001).

5. Claims 19-23 are provisionally rejected on the ground of nonstatutory double patenting over claims 21-26 of copending Application No. 10/729,070. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application

since the referenced copending application and the instant application are claiming common subject matter, as follows: Although the claims are not identical, the claims in Application No. 10/729, 070 encompass either directly or inherently the claims of the instant application.

"A later patent claim is not patentably distinct from an earlier patent claim if the later claim is obvious over, or **anticipated by**, the earlier claim. In re Longi, 759 F.2d at 896, 225 USPQ at 651 (affirming a holding of obviousness-type double patenting because the claims at issue were obvious over claims in four prior art patents); In re Berg, 140 F.3d at 1437, 46 USPQ2d at 1233 (Fed. Cir. 1998) (affirming a holding of obviousness-type double patenting where a patent application claim to a genus is anticipated by a patent claim to a species within that genus). " ELI LILLY AND COMPANY v BARR LABORATORIES, INC., United States Court of Appeals for the Federal Circuit, ON PETITION FOR REHEARING EN BANC (DECIDED: May 30, 2001).

6. Claim 2 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 17 of copending Application No. No. 10/729,070 in view of Ling et al. (WO 02/078211 A2). Claim 17 of application 10/729,070 discloses all limitations of claim 1 of the instant application. Claim 17 does not teach the method further comprising: performing spatial processing on a third transmission received via the first link with the at least one eigenvector to recover data symbols for the third transmission. Ling teaches computing of an eigenvector matrix for processing subchannels 1-1-N_{Nc} from multiple transmit antennas.

However, Ling et al. performing spatial processing on a third transmission received via the first link with the at least one eigenvector to recover data symbols for the third transmission.

Ling teaches computing of an eigenvector matrix for processing subchannels 1-1-N_{Nc} from multiple transmit antennas [1042].

It would have been obvious to one skilled in the art to incorporate the teachings of Ling et al. to improve performance in a multi transmit/receive antenna environment.

This is a provisional obviousness-type double patenting rejection.

7. Claim 11 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 17 of copending Application No. No. 10/729,070 in view of Raleigh et al. (US Patent 6,452,981 B1). Claim 17 of application 10/729,070 discloses all limitations of claim 11 of the instant application. Claim 17 does not teach the method further comprising: calibrating the first and second links such that a channel response estimate for the first link is reciprocal of a channel response estimate for the second link for matching in the amplitude and phase response of between the transmitter and receiver.

However, Raleigh et al. teaches calibrating the first and second links such that a channel response estimate for the first link is reciprocal of a channel response estimate for the second link for matching in the amplitude and phase response of between the transmitter and receiver (col. 29, lines 48-63).

One skilled in the art would have been motivated to incorporate the teachings of Raleigh et al. as a method of reducing interference from unintentional transmitters.

This is a provisional obviousness-type double patenting rejection.

8. Claim 12 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 17 of copending Application No. No. 10/729,070 in view of Raleigh et al. (US Patent 6,452,981 B1) and further in view of Boros et al. (US Patent 6,668,161 B2).

Claim 17 of application 10/729,070 in combination with Raleigh et al. disclose all limitations of claim 11 of the instant application. The combination does not teach wherein the calibrating includes obtaining correction factors for the first link based on the channel response estimates for the first and second links, and obtaining correction factors for the second link based on the channel response estimates for the first and second links.

However Boros et al. discloses the method of claim 11, wherein the calibrating includes obtaining correction factors for the first link based on the channel response estimates for the first and second links, and obtaining correction factors for the second link based on the channel response estimates for the first and second links (col. 33, lines 47-55).

It would have been obvious to one skilled in the art at the time of invention to apply the method as taught by Boros et al. as a method for improving signal estimation to account for differences in the RF paths (col. 8, lines 28-40).

Allowable Subject Matter

9. Claims 40-41 are allowed.

10. Claims 9, 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter: A search of prior art records has failed to disclose a method for performing spatial processing comprising: " wherein the second transmission is spatially processed with a normalized eigenvector for transmission one eigenmode of a MIMO channel for the second link, the normalized eigenvector including a plurality of elements having same magnitude" or wherein the first transmission is a steered pilot generated with a normalized eigenvector for one eigenmode of a MIMO channel for the first link, the normalized eigenvector including a plurality of elements having same magnitude, and wherein one eigenvector usable for spatial processing for the first and second links is obtained" as disclosed in claims 9 and 10, respectively.

Nor does the prior art teach a method for performing spatial processing comprising: "performing spatial processing on pilot symbols with a normalized eigenvector for one eigenmode of a MIMO channel to generate a first steered pilot for transmission via the one eigenmode of the MIMO channel, the normalized eigenvector including a plurality of elements having same magnitude" as disclosed in claim 40.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a.) Tesfai et al. discloses in US 2003/0165187 A1 System And Method For Joint Maximal Ratio Combining Using Time-Domain Based Signal Processing.

b.) Ketchum et al. discloses in US 2004/0165684 A1 Derivation Of Eigenvectors For Spatial Processing In MIMO Communication System.

c.) Wallace et al. discloses in US 2006/002496 A1 Efficient Computation Of Spatial Filter Matrices For Steering Transmit Diversity In A MIMO Communication System.

d.) Meno et al. discloses in US Patent 6,940,917 B12 Beam-Forming And Beam-Forming For WideBand MIMO/MISO Systems.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence B Williams whose telephone number is 571-272-3037. The examiner can normally be reached on Monday-Friday (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lawrence B. Williams

EMMANUEL BAYARD
PRIMARY EXAMINER